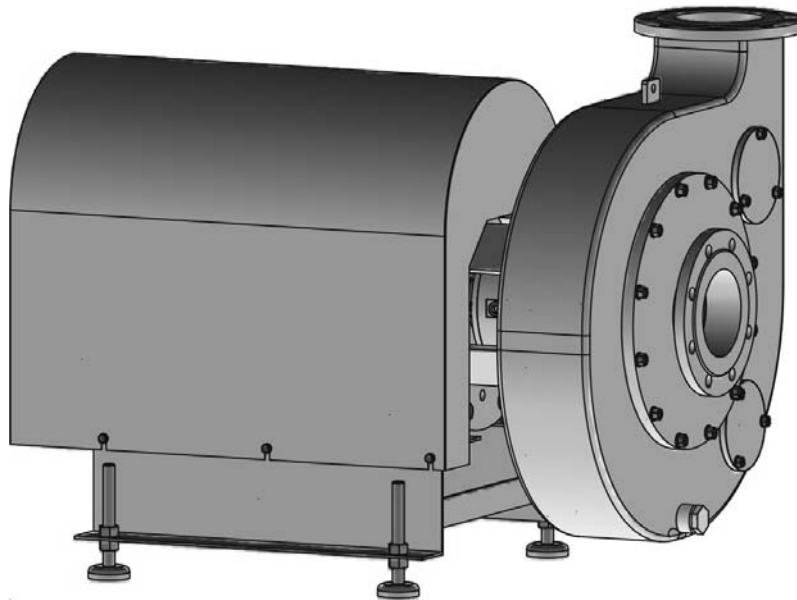


User manual

CP-AGF

Centrifugal pumps



CE/CP-AGF (0908) EN-01

Pomac Pumps

Pomac BV - Feithspark 13 - 9356 BX Tolbert
Tel +31(0) 594 51 28 77 - Fax +31(0) 594 51 70 02
sales@pomacpumps.com - www.pomacpumps.com

This user manual has been released d.d.:.....
and belongs to:

--	--	--	--	--	--	--

Serial number		
capacity		m ³ /h
pressure		bar
NPSHR		m
Drive, make		
type		
speed		min ⁻¹
voltage △ / ▲	/	V
frequency		Hz
current		A
power		kW
isolation class		
protection class	IP	
area classification		
Coupling, make		
type		
size		

User manual Pomac CP-AGF pumps

This manual has been compiled with the utmost care. However, POMAC assumes no liability for possible deficiencies of the information in this manual. It is the responsibility of the buyer/user of this pump to ensure this information is complete and up-to-date.

All technical information mentioned in this user manual remains property of Pomac bv and may only be used for the installation, operation and maintenance of this pump. The information may not be copied, duplicated or passed on to third parties without our written permission.

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Release date: August 2009

Doc. ID. : **CE/CP-AGF (0908) EN-01**

Warning!



All work regarding the pump must always be in accordance with all the prevailing standards regarding occupational health and safety as well as machine safety!



Never allow the pump to run without being connected to the piping!



When performing maintenance work to the pump ensure that the power supply to the pump is disconnected and can not be switched on unintentionally!



When performing maintenance work to the pump always wear protective gloves and safety goggles if the pump conveys liquids which are a health hazard!



Ensure that the pump is depressurized, when it has to be disassembled for overhaul!



Before performing maintenance work to the pump allow the pump to cool down first when it is conveying hot liquids!



Never stand underneath a hoisted pump!



Never insert fingers into the pump casing or into the connection ports. Even manually rotating the shaft can cause injury!



If the pump is connected to the power supply: ensure the pump is shut down and take precautions to prevent unintentional starting up of the pump!



An electric drive may only be connected to the electric power supply by a qualified electrician!

Caution!

- !** The system must **ALWAYS BE FLUSHED!** Not only **BEFORE INSTALLING** the pump, but **AFTER EACH ACTIVITY DURING WHICH THE SYSTEM HAD TO BE OPENED**, e.g. replacement of valves or piping segments!
- !** If the risk exists of exceeding the maximum working pressure a safety device must be fitted to the pump, the drive or the system!
- !** A pump which is **NOT** equipped with a **QUENCHED** shaft seal may **NEVER** be installed in a position where it possibly could run **DRY!**
- !** The maximum values given for pressure, speed or temperature may never be exceeded!

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1. Introduction

1.1. General information

This manual provides important information regarding the correct way of installing, operating and servicing this pump.

This manual also provides information necessary to prevent the installer/operator from injury or discomfort during installation and operation of this pump and to ensure the correct use and reliable performance of this pump.

This manual represents the most recent information regarding the pump types mentioned in this manual at the time of going to print. However, POMAC reserves the right to modify the construction of the pump types mentioned, as well as the contents of this manual, without prior or afterward notification.

Read this manual thoroughly before installing, operating or servicing this pump. Ensure that operators and maintenance staff are familiar with the symbols used. Follow the instructions in this manual step by step.

1.2. Warranty

Warranty is strictly limited to the conditions specified by POMAC and will only be granted according to these conditions. Warranty will only come into force provided that:

- the pump has been installed and put into operation strictly in accordance with the instructions given in this manual.
- maintenance and repairs have been carried out according to the instructions given in this manual.
- exclusively original POMAC parts or parts provided by POMAC have been used for replacing parts.
- the pump has not been used for applications other than those shown in the specifications according to which the pump was sold.
- no changes have been made to the construction of the pump itself by the buyer.
- the damage is not the result of work carried out by persons not qualified or appointed.
- the damage has not been caused through major force.

1.3. Transport and receipt

1. Check to see if the pump has not been subject to damage during transportation. If this is the case, report it directly to the carrier and to POMAC;
2. If the pump is delivered on a pallet, leave it on the pallet for as long as possible. This facilitates internal transport.
3. If a suitable hoisting device is available, use this if the pump is fitted with lifting eyes.
4. With the exception of the motors fitted with a stainless steel shroud, the motors (pumps) from construction size 132 on can be fitted with a screw-in lifting eye.

Motor size	132	160	180	200
Lifting eye thread size	M10	M10	M12	M16

1.4. Type code

The type code consists of the following items:

x	x	x	-	x	-	x	-	x	-	x
1	2	3		4		5		6		7

Example: **CP-AGF 50088 – DVMF – 6 – 0750 – Q1**

1. Type

CP-AGF

2. Pump size

500 / 750 / 1000

3. Connection sizes

88 = NW100
1212 = NW150
1616 = NW200

4. Construction

DVMF = close coupled, prolonged motor shaft, stainless steel motor shroud, pump unit placed on Omega profiles
DVF = close coupled, prolonged motor shaft, pump unit placed on Omega profiles

5. Electric motor poles

4 (= 1500 rpm at 50 Hz)
6 (= 1000 rpm at 50 Hz)
8 (= 750 rpm at 50 Hz)

6. Power

0300 = 3 kW
0400 = 4 kW
0550 = 5,5 kW
0750 = 7,5 kW
1100 = 11 kW
1500 = 15 kW
1850 = 18,5 kW
2200 = 22 kW
3000 = 30 kW
3700 = 37 kW
4500 = 45 kW

7. Mechanical seal

- S1 = internal single mechanical seal - unbalanced
- B1 = internal single mechanical seal - balanced
- Q1 = internal single mechanical seal - unbalanced,
with oil-bath quench with oil seal
- Q2 = internal single mechanical seal - balanced,
with oil-bath quench with oil seal

1.5. Ordering spare parts

An order form for ordering spare part is included in the documents accompanying this pump. You should state the following details on this form:

- your **address data**
- the **serial number and the type number** (these are stated on the type plate of the pump and on the first page of this manual).
- the **item numbers** and **quantities** of the desired parts.



See chapter 8 for the sectional drawings of the pump, with the corresponding parts lists with item numbers.

1.6. Manufacturer

CP-AGF pumps are manufactured by

Pomac bv
Feithspark 13
9356 BX Tolbert
Holland
Tel +31(0) 594 5128 77
Fax +31(0) 594 5170 02
info@pomacpumps.com
www.pomacpumps.com

2. Safety

2.1. General information

This manual provides information necessary to prevent the installer/operator from injury or discomfort during installation and operation of this pump and to ensure the correct use and reliable performance of this pump.

- Read this manual thoroughly before installing, operating or servicing this pump.
- Ensure that operators and maintenance staff are familiar with the contents of this manual and with the instructions given.
- Ensure that operators and maintenance staff are familiar with the symbols used.
- Follow the instructions in this manual step by step.
- Store this manual in a place that is known and accessible to any user.

2.2. Instructions

This manual contains instructions with regard to the safety of the user, the continued good functioning of the pump and hints to facilitate certain actions or procedures.

These instructions are indicated with the following symbols:



Warning! May cause injury to the user! Act strictly in accordance with the instructions given!



Caution! May cause severe damage to the pump or bad functioning! Closely follow the instructions given!



Note: Hint or instruction that can facilitate certain actions.

Issues which require extra attention are printed in **bold**.

2.3. Staff

All personnel, in charge of the installation, operation or maintenance and overhaul of the pump, should have received the necessary training.

2.4. Precautions



When performing maintenance work to the pump ensure that the drive of the pump is shut down and can not be switched on unintentionally!



All work on and with the pump must always be in accordance with all the prevailing standards regarding occupational health and safety as well as machine safety!



Always wear protective gloves and safety goggles if the pump conveys harmful liquids that may cause injuries!



See to it that the pump is depressurized, when it has to be disassembled for overhaul!



Allow the pump to cool down first when it is used for conveying hot liquids!

2.5. Changed application

- Contact POMAC in case the pump is going to be used for other applications or in different circumstances than those specified during the initial pump selection.

3. Description

3.1. CP-AGF centrifugal pump

3.1.1. Pump description

The CP-AGF is a stainless steel sanitary centrifugal pump that is used for pumping liquids containing solids. This process requires a constant liquid flow with a pre-pressure at the suction side.

De CP-AGF pumps are applied for pumping turnip-shaped products, like potatoes, vegetables and fruit.

3.1.2. Application area

The application area goes from a capacity of 500 m³/h to a manometric head of 2 bars.

3.1.3. Pump impeller design

The pumps are equipped with a closed impeller.

3.2. Connections

All pump types are provided with the following connections:

- Flanges DIN 2633

3.3. Materials

- All parts that come into contact with the liquid are designed in stainless steel 304 (Werkstoffnr. 1.4301).
- All pumps are suitable for being C.I.P. cleaned.

3.4. Constructive variants

The CP-AGF pumps are available in the following designs:

CP-AGF DVMF

Pump and motor close coupled and placed on adjustable stainless steel Omega profiles. The motor is provided with a stainless steel shroud.

CP-AGF DV_F

Pump and motor close coupled and placed on adjustable stainless steel Omega profiles.

3.5. Shaft sealing

The shaft sealing of a standard pump assembly comprises a mechanical seal with SiC/SiC slide rings and EPDM secondary seal. The shaft seal is provided with an oil-bath quench, sealed at atmospheric side with an oil seal, running to a speedy sleeve. The applied mechanical seal types are according to EN 12756 (DIN 24960), with the exception of the build-in length.

3.6. Drive

- The pumps are fitted with B3/B5 foot/flange motors acc. to IEC.
- The electric motors are available in all possible voltages, insulation categories, protection categories and in low-noise design.

4. Installation

4.1. General

- The foundation must be smooth and level.
- Adjust the adjustable feet (11), by means of the nuts (37), **in such a way that the pump is resting stably on all 4 feet!** Once the pump is positioned stably, secure the adjustable feet with the counter nuts (37).
- Verify that the system pressure does not exceed the permitted operating pressure.
- Verify that the pipes do not show any leakage.
- The pipes must be installed and connected stress-free.

4.2. Connecting the electric motor



An electric motor may only be connected by a qualified electrician!

5. Putting into operation

5.1. Preparations

5.1.1. General

- Check that the shaft can turn freely. To do this, rotate the impeller a few times manually.
- Check that the fuses have been fitted.

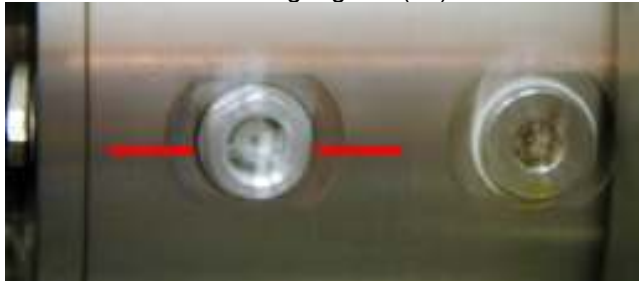
5.1.2. Quench

- **First fill the oil-bath quench compartment with oil!**
The recommended oil type is: **Foodgrade Energol GR-FG 220 BP.**

1. Remove the vent-plug (1) and place a funnel in the fill hole.



2. Pour the oil into the oil-bath compartment until the oil shows in the centre of the oil sight glass (10).



3. Replace the vent plug.

5.2. Checking the rotation direction

1. Fill the pump with the liquid to be pumped.
2. Switch the pump on briefly.



Be careful with any unprotected rotating parts!

3. Check that the rotation direction of the motor corresponds with the rotation direction of the pump (which is indicated by an arrow on the lantern piece). If the rotation direction is not correct, swap the connection wires L1 and L2.



This must be done by a qualified electrician!

4. Fit the motor shroud (only for DVMF).

5.3. Putting into operation

1. Check that the oil-bath quench compartment is sufficiently filled with oil.
2. Fully open the shut-off-valve in the suction pipe.
3. Close the delivery valve.
4. Switch the pump on and allow it to come up to pressure.
5. Subsequently open the delivery valve.
6. Set the pump to its required operating point.

5.4. In operation

5.4.1. Noise

The noise data stated in this manual refer to normal usage, with an electric motor. Under these conditions the noise level is below 85 dB(A). If after the passage of time the pump produces excessive noise, this can be an indication that there is a fault in the pump or elsewhere in the system (e.g. worn out bearings, cavitation).

5.5. Maintenance

5.5.1. Daily maintenance



Regularly check the oil level of the quench compartment.

- The valve in the suction pipe must always be completely open
- Regularly check that the inlet pressure is not too low to avoid the occurrence of cavitation in the pump
- Regularly check the delivery pressure
- Regularly check the shaft seals for leakage.



The pump may never run without liquid

5.5.2. Periodic maintenance

CP-AGF pumps basically are maintenance free. Only the following items require periodic attention:



Periodically check that the quench compartment is sufficiently filled with oil!

- The electric motor bearings are greased for their entire life and do not require any maintenance or subsequent lubrication.
- A mechanical seal may not show any visible leakage. If any leakage is visible, replace the mechanical seal.
- If a mechanical seal does not show any visible leakage disassembly is not recommended!

5.6. Malfunction

If there is a malfunction in the pump, try to find the cause using the troubleshooting list at the back of this manual or consult your installer!



Always switch off the current first if you intend to investigate the malfunction yourself. Remove the fuse or lock the operating switch with a pad lock!



The pump can still be hot or under pressure. Allow the pump to cool down first and if possible release the pressure from the pump. Always wear the correct personal protection devices (goggles, gloves, etc.)!

6. Overhaul and repair

6.1. Removing the pump



The item numbers shown (...) refer to the illustrations and the parts lists in chapter 7.



First ensure the electric current has been switched off. Remove the fuses or switch the operating switch to OFF and lock it with a pad lock!

1. Close the suction valve and the delivery valve of the suction and delivery lines to the pump.
2. Place an appropriate drain pan under the drain opening. Unscrew drain plug (6) and drain the pump. Replace the drain plug.



If the pumped liquid is HOT, first allow the pump to cool down!

3. Disconnect the electrical connections to the electric motor.
4. Loosen the connections of the pipes and remove the pump from the piping.

6.2. Dismantling the pump

6.2.1. Disassembling the impeller and the mechanical seal

1. Remove the vent plug (1) and the drain plug (2) and drain the oil from the quench compartment. Replace the vent plug and the drain plug with sealing ring (3).
2. Remove the front side pump cover nuts (35) and washers (40) and remove the front pump cover (28). Remove the pump cover O-ring (21).
3. Remove the impeller screw (16) and O-ring (20).
4. Mount the impeller extractor (4) and tighten it to loosen the impeller. When the impeller (23) has come loose from the motor shaft remove the impeller. Unscrew the impeller extractor.



5. Remove the shim (5) from the shaft hole of the impeller hub.
6. Remove the rotary part of the mechanical seal (24) from the impeller hub.
7. Remove the stationary part of the mechanical seal (24) from its seat in the seal compartment.
8. Inspect the disassemble parts for possible wear and replace them if they show too much wear.
9. Turn the motor shaft by hand to inspect the condition of the motor bearings. If the bearings show excessive play have the motor overhauled.

6.2.2. Disassembling the pump casing



Use an appropriate hoisting device to remove the pump casing. It is too heavy to be lifted by hand!

1. Apply a crane hook to the lifting eye of the pump casing.
2. Remove the rear side pump cover nuts (35) with washers (40).
3. Remove the pump casing, using the hoisting device.
4. Remove the pump cover O-ring (21).

6.2.3. Disassembling the mechanical seal compartment

1. Remove the fixation screws (30) and remove the rear pump cover (13) with the seal compartment.
2. Remove screws (29) and washers (42) and remove the seal compartment (14). Remove the O-ring (7).
3. Remove screws (33) and remove the seal compartment cover (15). Remove the O-ring (7).
4. Check the oil seal (38).

6.3. Assembling the pump

6.3.1. O-rings



Prior to assembling the pump check all O-rings. Replace them when they show any wear or cracks.



Grease all O-rings with Foodgrade grease prior to mounting them.

6.3.2. Assembling the mechanical seal compartment

1. Apply some Foodgrade grease to the fitting rim and mount the oil seal (38) in the seal compartment cover (15).
2. Place an O-ring (7) and mount the seal compartment cover to the seal compartment (14), using screws (33).
3. Apply some Foodgrade grease to the seal seat and press the stationary part of the mechanical seal in the seal seat, using an appropriate plastic pressure piece. **Do not touch the sliding surface with your fingers.**
4. Place the other O-ring (7) and mount the seal compartment to the rear pump cover (13), using screws (29) and washers (42).
5. Mount the rear pump cover assembly to the intermediate piece (22), using fixation screws (30).

6.3.3. Assembling the pump casing

1. Place the rear pump cover O-ring (21).
2. Apply a crane hook to the lifting eye of the pump casing.
3. Position the pump casing against the rear pump cover and centre it to the rear pump cover by means of the studs.
4. Fix the pump casing, using nuts (35) and washers (40).

6.3.4. Assembling the impeller and the mechanical seal

1. Apply some Foodgrade grease to the impeller hub and mount the rotary part of the mechanical seal, applying a slightly twisting movement. **Do not touch the sliding surface with your fingers.**
2. Take notice of the position of the key in the motor shaft and position the impeller (23) in such a way that the key notch in the impeller hub is aligned with the key.
3. Centre the impeller on the motor shaft and push it backward until the impeller hub touches the motor shaft end.
4. Keep the impeller pushed in this position and measure the depth **D** between the impeller front and the front cover fitting face on the pump casing.

The required shim thickness is $0.5 \cdot (D - X)$, see table below for value of X.

CP AGF 500	4
CP AGF 750	2.6

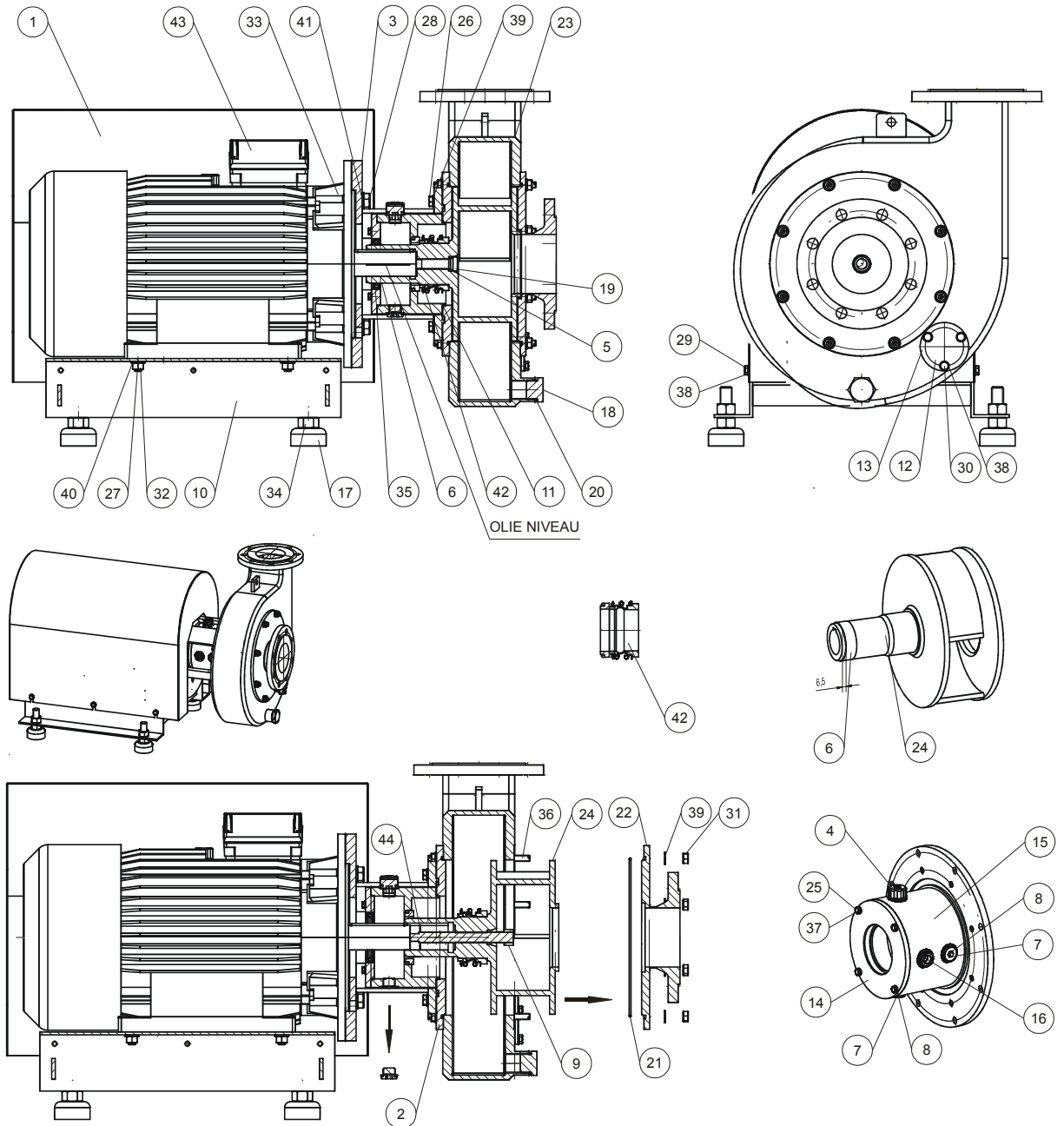


5. Remove the impeller from the motor shaft and place a shim of the correct thickness in the shaft hole of the impeller hub.
6. Repeat steps 2 and 3.
7. Put the O-ring (20) around the impeller screw (16), using some Foodgrade grease and fix the impeller with the impeller screw.
8. Place the front pump cover O-ring (21).
9. Mount the front pump cover (13) with the pump cover nuts (35) with washers (40).

7. Sectional drawings and parts lists

7.1. CP AGF 500 DVMF

7.1.1. Sectional drawing

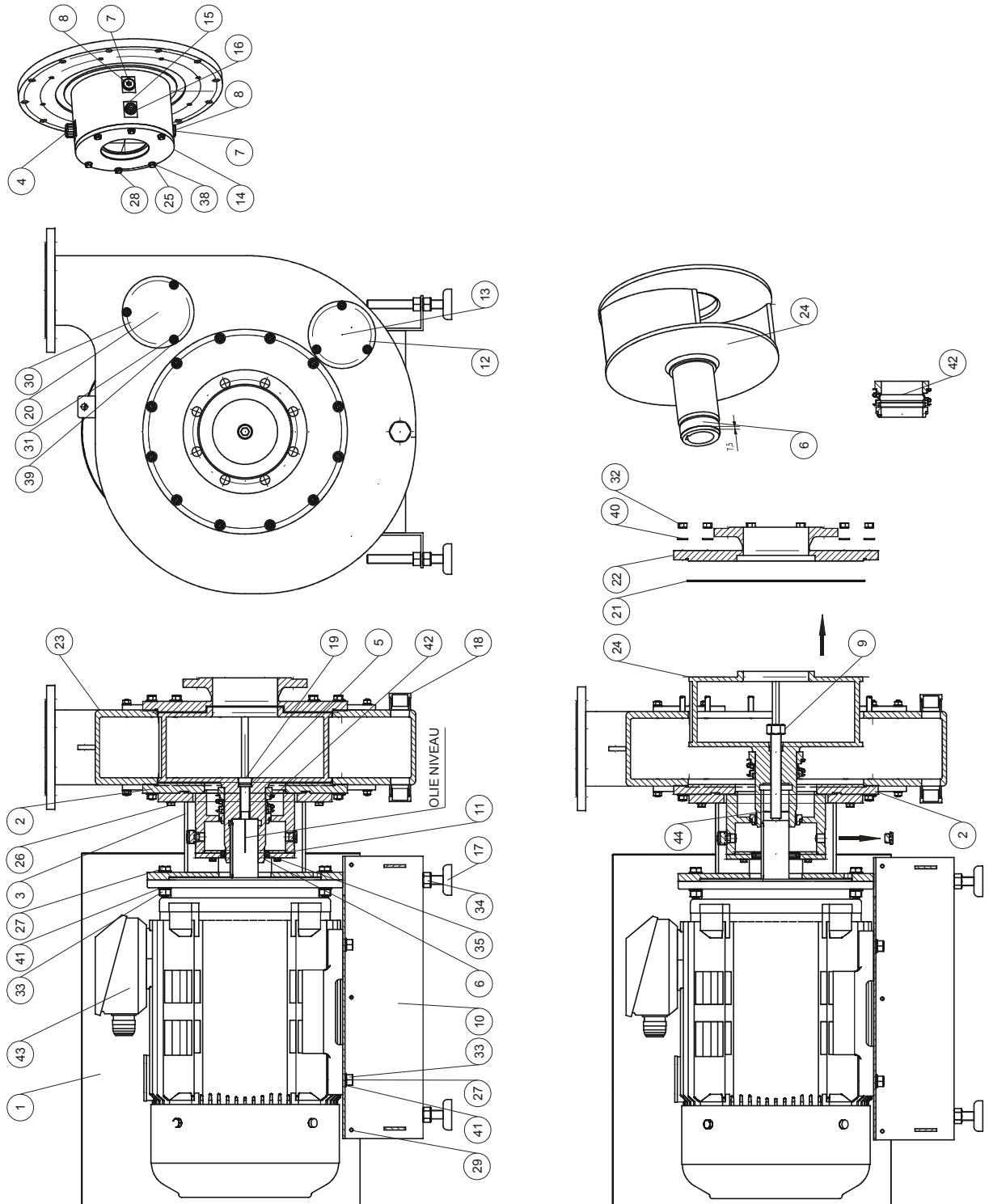


7.1.2. Parts list

POS	QTY	DESIGNATION	MAT.	PART. NR.
1	1	MOTOR SHROUD SIZE 160L		ALG.009-017-010
2	1	REAR FLANGE		ALG.009-017-005
3	1	INTERMEDIATE PIECE SIZE 160		ALG.009-017-012
4	1	VENT PLUG SFV. 1/2-10 MB		054.211-011
5	1	O-RING 19,2x3	EPDM/FDA	051.741-100155
6	1	SLEEVE ø65	RVS 304	P.000.000.508
7	2	INNER HEX PLUG G-1/2"		P-000-000-331
8	2	SEALING RING 1/2"	PVC	P-000-000-482
9	1	IMPELLER EXTRACTOR		ALG.009-017-008
10	1	BASEMENT SIZE 160	EPDM	ALG.009-017-009
11	2	O-RING ø139,37x2,62	EPDM	P-000-000-495
12	1	O-RING ø48x2		051.741-100132
13	1	INSPECTION COVER		ALG.009-017-015
14	1	SEAL SEAT COVER		ALG.009-017-007
15	1	SEAL SEAT		ALG.009-017-006
16	1	OIL SIGHT GLASS G1/2"		054.210-012
17	4	MACHINE ADJUSTABLE FOOT TYPE H M20x70	RVS	P-000-000-299
18	1	HEXAGON PLUG FTHPP 316 1"		051.000.000.005
19	1	MODIFIED BOLT ISO4762 M16x90		700.418-007
20	1	O-RING 28,17x3,53	EPDM	051.741-100142
21	2	O-RING 263x4	EPDM	051.741-000087
22	1	FRONT FLANGE		ALG.009-017-018
23	1	PUMP CASING CP500		ALG.009-017-014
24	1	IMPELLER ø260x90		ALG.009-017-017
25	4	HEX. HEAD SCREW ISO 4014 M6x130	A2	051.001-06-130-05
26	8	HEX. HEAD SCREW ISO 4017 M10x25	A2	051.002-10-025-05
27	4	HEX. HEAD SCREW ISO 4017 M12x50	A2	051.002-12-050-05
28	4	HEX. HEAD SCREW ISO 4017 M16x55	A2	051.002-16-055-05
29	6	HEX. HEAD SCREW ISO 4017 M8x12	A2	051.002-08-012-05
30	3	HEX. HEAD SCREW ISO 4017 M8x16	A2	051.002-08-016-05
31	10	HEX.NUT ISO 4032 M10	A2	051.011-10-000-05
32	4	HEX.NUT ISO 4032 M12	A2	051.011-12-000-05
33	4	HEX.NUT ISO 4032 M16	A2	051.011-16-000-05
34	8	HEX.NUT ISO 4032 M20	A2	051.011-20-000-05
35	1	OIL SEAL DIN 3760-B 65x85x10	NBR	P-000-000-490
36	16	SET SCREW ISO 4766 M10x35	A2	051.046-10-035-05
37	4	WASHER ISO 7089-6	A2	051.013-06-000-05
38	9	WASHER ISO 7089-8	A2	051.013-08-000-05
39	24	WASHER ISO 7089-10	A2	051.013-10-000-05
40	8	WASHER ISO 7089-12	A2	051.013-12-000-05
41	8	WASHER ISO 7089-16	A2	051.013-16-000-05
42	1	MECHANICAL SEAL DY520-70/t4		P-000-000-489
43	1	ELECTRIC MOTOR 11KW 1500RPM SIZE160 B35		054.530-058
44		SHIM 30x42x0,3		P-000-000-522
		SHIM 30x42x0,5		P-000-000-521
		SHIM 30x42x1,0		P-000-000-520

7.2. CP AGF 750 DVMF

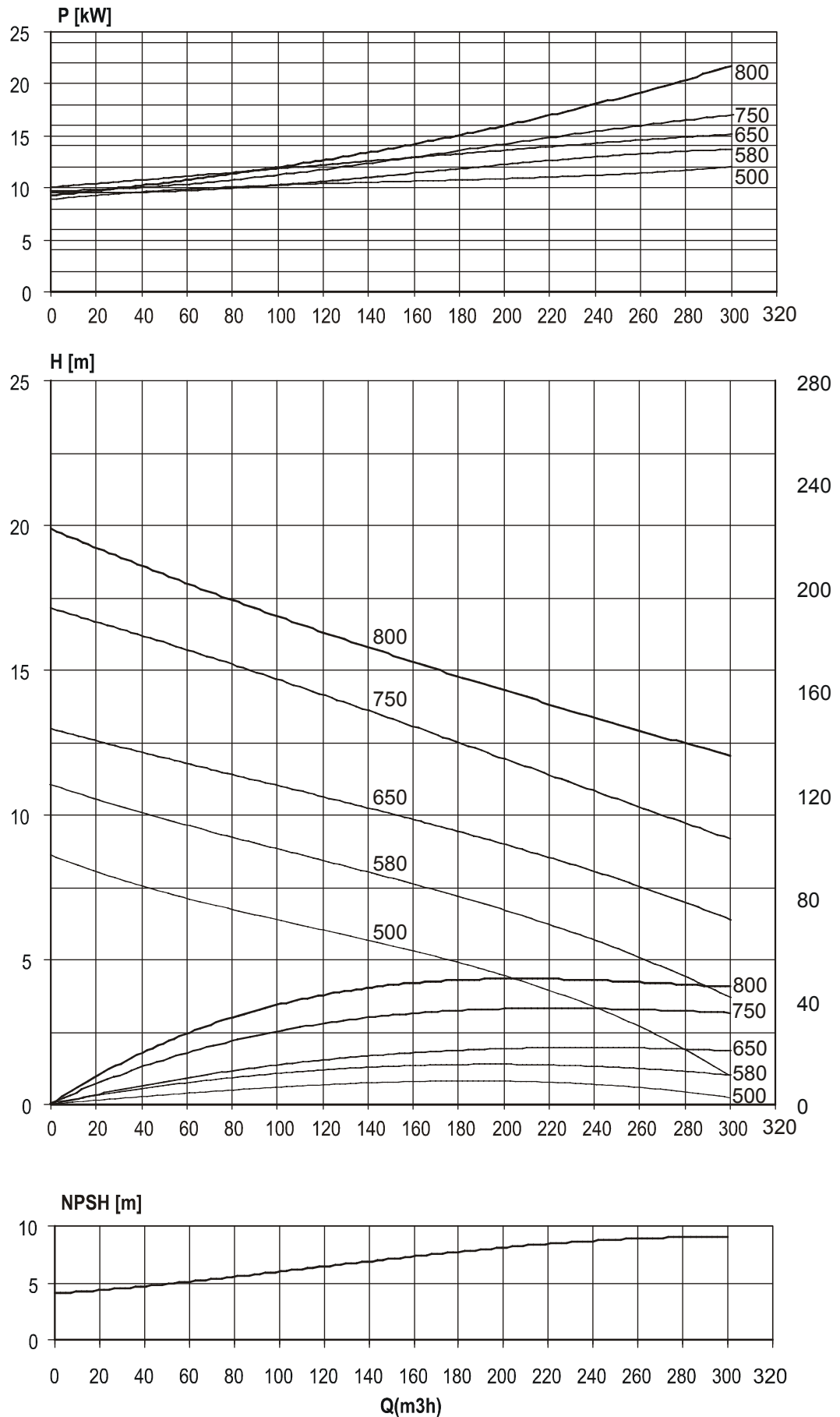
7.2.1. Sectional drawing



7.2.2. Parts list

POS	QTY	DESIGNATION	MAT.	PART. NR.
1	1	MOTOR SHROUD CP750		ALG.008-003-010
2	1	REAR FLANGE		ALG.008-003-005
3	1	INTERMEDIATE PIECE SIZE 225 CP750		ALG.008-003-012
4	1	VENT PLUG SFV.1/2-10 MB		054.211-011
5	1	O-RING ø25,2x3	EPDM	051.741-000097
6	1	SLEEVE ø90	RVS 304	P-000-000-342
7	2	INNER HEX PLUG G-1/2"		P-000-000-331
8	2	SEALING RING 1/2"	PVC	P-000-000-482
9	1	IMPELLER EXTRACTOR CP750 AGF		ALG.008-003-008
10	1	BASEMENT CP750		ALG.008-003-009
11	2	O-RING ø183,74x3,53	EPDM	051.741-000096
12	1	O-RING ø115x2		P-000-000-343
13	2	LOWER INSPECTION COVER		ALG.008-003-015
14	1	SEAL COMPARTMENT COVER		ALG.008-003-007
15	1	SEAL SEAT DY520		ALG.008-003-006
16	1	OIL SIGHT GLASS G1/2"		054.210-012
17	4	MACHINE ADJUSTABLE FOOT TYPE H M20x70	RVS	P-000-000-299
18	2	HEX PLUG G11/4"	RVS 316	P-000-000-348
19	2	MODIFIED BOLT DIN912 M20x110		ALG.008-003-011
20	2	UPPER INSPECTION COVER		ALG.008-003-016
21	2	O-RING ø404x4	EPDM	051.741-000087
22	1	FRONT FLANGE CP750		ALG.008-003-018
23	1	PUMP CASING CP750		ALG.008-003-014
24	1	IMPELLER ø400-140 CP750		ALG.008-003-017
25	4	HEX.SCREW ISO 4014 M8x160	A2-70	051.001-08-160-05
26	8	HEX. HEAD SCREW ISO 4017 M10x35	A2	051.002-10-035-05
27	12	HEX. HEAD SCREW ISO 4017 M16x60	A2-70	051.002-16-060-05
28	2	HEX. HEAD SCREW ISO 4017 M8x25	A2-70	051.002-08-025-05
29	6	HEX. HEAD SCREW ISO 4017 M8x12	A2	051.002-08-012-05
30	2	O-RING ø120x2	EPDM	P-000-000-344
31	12	HEX.NUT ISO 4032 M10	A2	051.011-10-000-05
32	24	HEX.NUT ISO 4032 M12	A2	051.011-12-000-05
33	12	HEX.NUT ISO 4032 M16	A2	051.011-16-000-05
34	8	HEX.NUT ISO 4032 M20	A2	051.011-20-000-05
35	1	OIL SEAL DIN 3760-B90x110x12-NBR	NBR	051.763-040
38	12	WASHER ISO 7089-8	A2	051.013-08-000-05
39	20	WASHER ISO 7089-10	A2	051.013-10-000-05
40	24	WASHER ISO 7089-12	A2	051.013-12-000-05
41	24	WASHER ISO 7089-16	A2	051.013-16-000-05
42	1	MECHANICAL SEAL WITH BELLOWS DY520-95NP		052.001-100-017
43		ELECTRIC MOTOR 22KW 750RPM SIZE.225 B35		054.530-115
44		SHIM 45x55x0,3		P-000-000-519
		SHIM 45x55x0,5		P-000-000-518
		SHIM 45x55x1,0		P-000-000-337

8. Performance curves



9. Trouble shooting

A malfunction in a pump system may have various causes. The malfunction is not always necessarily in the pump itself, but can also be caused by a malfunction in the piping system, or in another appendage in the system. If the operating conditions differ too greatly from the specifications by which the pump was purchased this can also cause malfunctioning. Therefore always check first:

- Has the pump been installed correctly?
- Are the operating conditions still according to the initial specifications?
- Are the other appendages in the pipe system functioning correctly?

In general terms, the following malfunctions in a pump can be distinguished:

1. pump gives no or little liquid
2. pump does not reach duty point
3. pump gives irregular liquid flow
4. pump leaks
5. pump vibrates excessively
6. pump makes too much noise
7. motor overheats
8. pump cuts out thermally
9. pump has seized

The table on the next page gives a possible cause and solution for the malfunctions mentioned above:



When establishing the cause of a malfunction of the pump ensure that the power supply to the pump is disconnected and can not be switched on unintentionally!

Malfunction										Cause	Action
1	2	3	4	5	6	7	8	9			
	♦				♦	♦				electrical connection defective	Have qualified electrician check the electric connections
	♦									wrong rotation direction	Have qualified electrician reverse the sense of rotation of the electric motor
♦										pump is not completely filled with liquid	Top up the pump entirely with liquid
♦	♦	♦			♦					insufficient pre-pressure	Increase the pre-pressure or place the pump on a lower position
	♦						♦			pump operating at the wrong speed	Check the motor speed
								♦		contaminations or objects in the pump	Clean the pump, if necessary disassemble
♦	♦	♦								air in the piping	Inspect the piping
	♦									valve in suction pipe is not completely open	Entirely open the valve in the suction pipe
	♦									pump selected with too small delivery head	Install another pump
♦	♦	♦						♦		suction pipe or filter blocked	Clean the suction pipe or the filter
			♦							shaft seal defective	Disassemble the pump and replace the shaft seal
							♦			liquid temperature is too high	Decrease the liquid temperature
			♦							defective O-ring	Disassemble the pump and replace the O-ring
♦							♦	♦		impeller is jammed	Inspect the impeller through the inspection ports
				♦	♦		♦	♦		impeller is damaged	Disassemble the pump and replace the impeller
				♦	♦	♦	♦	♦		motor shaft is bent	Replace the motor
				♦	♦	♦	♦	♦		bearings are damaged or worn	Replace the motor
							♦	♦		motor is overloaded	Check the viscosity of the liquid. Switch off the motor and check if the impeller does not drag. If so, disassemble the pump and adjust the shim thickness

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